

# PATENT COOPERATION TREATY

U 016344-2

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/IN2004/000009

International filing date (day/month/year)  
13.01.2004

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC  
C01B33/40, C01B33/44

Applicant  
INDIAN PETROCHEMICALS CORPORATION LIMITED

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☒ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

## 2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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10/582471

AP20 Rec'd PCT/PTO 12 JUN 2006

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITYInternational application  
PCT/IN2004/000009

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**Box No. I Basis of the opinion**

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1. With regard to the **language**, this opinion has been established on the basis of the international application the language in which it was filed, unless otherwise indicated under this item.
  - ☐ This opinion has been established on the basis of a translation from the original language into the following language, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ in written format
    - ☐ in computer readable form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in computer readable form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating the has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE  
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International application I  
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**Box No. II Priority**

1. ☒ The following document has not been furnished:

☒ copy of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(a)).

☐ translation of the earlier application whose priority has been claimed (Rule 43*bis*.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. ☐ This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43*bis*.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

**Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)

Yes: Claims

6,7,10,13,24,25,31

No: Claims

1-5,8,9,11,12,14-23,26-30,32-42

Inventive step (IS)

Yes: Claims

No: Claims

1-42

Industrial applicability (IA)

Yes: Claims

No: Claims

1-42

2. Citations and explanations

see separate sheet

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International application No  
PCT/IN2004/000000

**SECTION V**

1. Novelty and inventive step (Art 33(2) and (3) PCT)
  - 1.1. The following documents are referred to in this communication:
    - D1 : EP 0 846 660 A
    - D2 : PARK J H ET AL: "The relationship between nano- and micro-structures and mechanical properties in PMMA-epoxy-nanoclay composites" POLYMER, ELSEVIER SCIENCE PUBLISHERS B.V, GB, vol. 44, no. 7, March 2003 (2003-03), pages 2091-2100, XP004412485 ISSN: 0032-3861
    - D3 : EP 0 747 451 A
    - D4 : EP 0 909 787 A
  2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1-5, 8, 9, 11, 12, 14-23, 26, 27, 29, 30 and 32-42 is not new in the sense of Article 33(2) PCT.
    - 2.1. Document D1 discloses (in particular: page 5, lines 10-25; page 5, line 40 - page 6, line 19; page 8, lines 3-10 and 22-31; page 9, line 31 - page 17, line 2) nanocomposites comprising a layered silicate such as smectite or bentonite and an intercalation material such as an C10+ alcohol, glycerol, a sorbitol, soybean oils or industrial rubbers (gums). The amount of organic compound to layered clay should preferably be 1:5 to 1:3. The layered material can be exfoliated by mixing and/or extruding. The nanocomposite further comprises a thermoplastic polymer preferably including 10-100 recurring monomer units. Therefore, the subject-matter of claims 1-5, 8, 9, 11, 12, 14-22, 26, 27, 29, 30 and 32-42 is not new vis-a-vis D1.
    - 2.2. The subject-matter of claims 1-3, 11, 17-21, 29 and 35-42 is not new vis-a-vis the disclosure of document D2 (in particular: pages 2093-2095).
    - 2.3. The subject-matter of claims 1-4, 9, 11, 12, 16-22, 27, 29, 30, 34 and 37-42 is not new vis-a-vis the disclosure of document D3 (in particular: page 13, line 26 - page 14, line 4; example 1; claims 1, 5, 14, 20 and 24).
    - 2.4. The subject-matter of claims 1-3, 11, 12, 16-21, 29, 30 and 34-42 is not new vis-a-

vis the disclosure of document D4 (in particular: paragraphs [0002]; [0006]; [0008] and [0074]).

- 2.5. Dependent claims 6, 7, 10, 13, 24, 25, 28 and 31 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step (Art. 33(3) PCT) because: Document D1 discloses the use of different carbohydrates as intercalation materials. Claims 6, 7, 13, 24, 25 and 31 differs from the disclosure in document D1 in that further types of carbohydrates are claimed. This difference, however, does not seem to represent anything unusual for the person skilled in the art. Furthermore, using the carbohydrates claimed in claims 6, 7, 13, 24, 25 and 31 does not seem be associated with any special technical effect that would justify inventiveness.

Using an alcoholic carrier liquid instead of an aqueous does not seem to represent anything unusual for the person skilled in the art. Furthermore, this does not seem be associated with any special technical effect that would justify inventiveness.